Program Charter
for
Science, Technology, and Infusion
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I. EXECUTIVE SUMMARY

Program Description

The Science, Technology, and Infusion Program (ST&I) is a matrix program that enables weather and water service improvements into NOAA operational services. ST&I strives to balance its near-term responsibility to address the needs of its primary customers both inside and outside of NOAA. ST&I provides a long term commitment to conduct visionary research critical for managing future environmental and societal threats. This dual responsibility requires knowledge of new technology to transfer research and development into operations, as well as exploring the unknown of important new concepts. These activities address priorities established by Congress and NOAA. NOAA works with a number of partners, including academia, Federal and state agencies to achieve goals.

II. PROGRAM REQUIREMENTS

A. Requirements Drivers:

- Weather Service Modernization Act, 5 U.S.C. § 313 note (Pub. L. No. 102-567, title VII, 106 Stat. 4303 (Oct. 29, 1992)). - This Act set forth a variety of Congressional oversight requirements related to National Weather Service modernization. It required the Secretary to prepare a National Implementation Plan as part of the Commerce budget justification. It required the Secretary to publish scientific and technical modernization criteria for commissioning and decommissioning radar, and for actions to close, consolidate, automate, or relocate field offices.
- *The Federal Plan for Meteorological Services and Supporting Research -- Fiscal Year 2005* is Congressionally-mandated [Public Law 87-843 (1963)] and is a one-of-a-kind document which articulates the meteorological services provided and supporting research conducted by agencies of the federal government. The Federal Plan helps to reduce overlap and duplication among the agencies. It is a comprehensive publication that documents proposed programs for Fiscal Year 2005 and reviews agency programs in Fiscal Year 2004. The plan demonstrates to the Congress and to

the Executive Branch how the federal agencies work together to accomplish their missions in an effective and efficient manner.

- *U.S. Weather Research Program (USWRP) Authorization Act:* The U.S. Weather Research Program (USWRP) is mandated to accelerate forecast improvements of high impact weather and facilitate full use of advanced weather information.

- Global Change Research Act of 1990, 15 U.S.C. § 2921 *et seq.* - *T*his act provides for the development and coordination of a comprehensive and integrated United States research program which will assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change. Section 2932 requires the President, through the Federal Coordinating Council on Science, Engineering, and Technology, to establish a Committee on Earth and Environmental Sciences, on which NOAA, among other agencies, must have at least one representative. Under section 2938, the President, the Chairman of the Council, and the Secretary of Commerce shall ensure that relevant research activities of the National Climate Program, established by the National Climate Program Act (15 U.S.C. § 2901 *et seq.*), are considered in developing national global change research efforts.

- U.S.C. § 883d, Improvement of methods, instruments, and equipments; investigations and research. To improve the efficiency of the National Ocean Survey and to increase engineering and scientific knowledge, the Secretary of Commerce is authorized to conduct developmental work for the improvement of surveying and cartographic methods, instruments, and equipments; and to conduct investigations and research in geophysical sciences (including geodesy, oceanography, seismology, and geomagnetism).

A. **Mission Requirements:**

- Provide NOAA operational units (such as the National Weather Service) with new science applications and technology tools to enable more skillful and timely forecasts and warnings as outlined in the Federal Plan for Meteorological Services and Supporting Research.
- Perform research to develop and transfer knowledge and information about atmospheric processes responsible for high-impact weather (including severe storms, hurricanes, floods…) to enable forecasters to provide improved, critical products and services as outlined in the Federal Plan for Meteorological Services and Supporting Research,
- Assess the applicability to the NOAA mission of new science and technology developed in the academic community, private sector, and other Government agencies as outlined in the Federal Plan for Meteorological Services and

Supporting Research.
Enhance environmental literacy of the general public and improve understanding, value, and use of weather and water information and services as outlined in the Global Change Research Act of 1990.

III. LINKS TO THE NOAA STRATEGIC PLAN

A. Goal Outcomes:

- Reduced loss of life, injury, and damage to the economy
- Better, quicker, and more valuable weather and water information to support improved decisions
- Increased customer satisfaction with weather and water information and services

B. Goal Performance Objectives:

- Increased lead time and accuracy for weather and water warnings and forecasts
- Improved predictability of the onset, duration, and impact of hazardous and severe weather and water events
- Increase application and accessibility of weather and water information as the foundation for creating and leveraging public (i.e. Federal, state, local, tribal), private and academic partnerships.
- Increase development, application, and transition of advanced science and technology to operations and services.
- Increase coordination of weather and water information and services with integration of local, regional, and global observation systems.
- Reduce uncertainty associated with weather and water decision tools and assessments.
- Enhance environmental literacy and improve understanding, value, and use of weather and water information and services.

C. Goal Strategies:

- Improve the reliability, lead-time, and effectiveness of weather and water information and services that predict changes in environmental conditions.
- Integrate an information enterprise that incorporates all stages from research to delivery, seeks better coordination of employee skills and training, and engages customers.
- Develop and infuse research results and new technologies more effectively to improve products and services, streamline dissemination, and communicate vital information more effectively.
- Work with private industry, universities, and national and international agencies to create and leverage partnerships that foster more effective

information services.
- Build a broad-based and coordinated education and outreach program by engaging individuals in continuous learning toward a greater understanding of the impacts of weather and water on their lives**.**
- Employ scientific and emerging technological capabilities to advance decision-support services and educate stakeholders.

IV. PROGRAM OUTCOMES

- Improve predictions of the onset, duration, and impact of high-impact weather and water events.
- Increase the application and accessibility of all types of environmental information and make this a foundation for creating and leveraging public, private, and academic partnerships.
- Improve scientific understanding of the key physical processes responsible for the weather and water conditions it predicts.
- Enable local, regional, and national resource and public safety managers to make effective policy and plans to optimize resource management and public safety.
- Increase the coordination of weather and water services by integrating local, regional, and global observation and information systems.
- Enhance its environmental literacy programs to enable society's understanding, value, and use of weather and water information services.

V. PROGRAM ROLES AND RESPONSIBILITIES

This program is established and managed with the procedures established in the NOAA Business Operations Manual. The Science Technology & Infusion (ST&I) Matrix Program improves the performance of NOAA's science and technology enterprise. ST&I maximizes effectiveness, efficiency and timeliness by pursuing improvements to weather and water missions and through the stewardship of applicable research fields and their enabling infrastructure consistent with national priorities. To this end, STI is a vehicle for NOAA's strategic plan, leading a systematic and coordinated process in response to current and future operational and service needs, providing support to:

A. Participating Line Offices Responsibilities:

1. OAR is responsible for the following weather and water research:
   - Improving the understanding of key processes
   - Improving the understanding of long-term trends
   - Improving NOAA's ability to measure variables and processes
   - Understanding what research is required to improve operational weather and water forecasting, developing improved prototype forecasting systems, and providing improvements to NWS
   - Communicating assessments of key weather and water processes to

decision makers in NOAA, Government agencies, and the private sectors
- Sharing research results with the scientific and engineering communities

2. NWS is responsible for the following:
   - Improving and evolving weather and water forecasting systems
   - Evaluating operational forecast guidance
   - Communicating operational data to customers
   - Educating weather and water customers about NOAA guidance and forecast products
   - Communicating weather and water observation, data assimilation, and forecast research needs to OAR

3. NESDIS is responsible for providing
   - Improving and evolving satellite observing, processing, and archiving systems for weather and water systems
   - Developing, evolving, and evaluating satellite data derived products
   - Communicating operational data to customers
   - Educating weather and water customers both within and outside Government on the utility of satellite data products
   - Developing and maintaining operational systems for archiving in situ and remotely sensed data.

4. Other NOAA Offices Responsibilities.
   - NMAO is responsible for providing ship and aircraft platforms for observing systems during field experiments.
   - The NOAA Office of General Counsel (GC) is responsible for providing legal services necessary to enable the program to discharge its duties. In this regard, NOAA GC provides a variety of specific services on an as-needed basis, including but not limited to: advice on legal issues related to program responsibilities; review and clearance of agreements, testimony, correspondence, and other documents; legal representation; assistance with litigation and requests for testimony or information; and coordination on behalf of the program with the Department of Commerce GC in the areas of contract, grant, intellectual property, labor and employment, appropriations, legislation and regulation, grant, litigation, and telecommunications law.
   - NOAA Research Council provides to the Program and NOAA Leadership guidance and recommendations to ensure that research is sufficient, of high quality, and appropriate for product improvement; also, for policy regarding the transition of research into operations.

- NOAA Education Council is the primary forum within the agency for the discussion of ideas and proposals for NOAA-wide education and outreach activities and priorities; and, makes recommendations on education matters to NOAA leadership.
- NOAA Observing Systems Council provides to the Program and NOAA Leadership guidance and recommendations on Observing Systems and data management strategies and, in particular, on integrating observing systems and data management strategies into the Global Earth Observing System of Systems (GEOSS).
- Administrative Services is responsible for providing administrative support for grants.
- Facilities is responsible for providing a safe and productive work environment.
- IT Services is responsible for providing the general IT services required.
- NOAA Office of Public, Constituent and Intergovernmental Affairs communicates findings and results via media**.**

B. External Agency/Organization Responsibilities:
The USWRP is facilitated by an interagency advisory group of DOD, NASA, and NSF representatives

VI. END USERS OR BENEFICIARIES OR PROGRAMS

A. Academia – the program awards extramural research grants to support tropical cyclone research, quantitative precipitation, and day 3 to 14 forecast systems research.

B. General Public – the general public benefits indirectly through advances in science and technology which lead to better environmental information and data products and services. The public benefits directly via advances in educational systems such as NOAA's Science on a Sphere. These are communicated to the public in many ways, and including the news media, educational outlets, museums and science centers.